CASE STUDY OF IMPACT
June 2016

Growing the Tasmanian Atlantic salmon farming industry

CSIRO-Industry collaboration delivering significant economic gains.

The challenge

The majority of Australian salmon farming is located in Tasmania, where waters are among the warmest in the world for Atlantic salmon culture. Warmer temperatures mean that Tasmanian Atlantic salmon can grow to a harvestable size within 16-18 months. However, faster growth comes at a cost: early maturation can affect product availability and quality, and temperature-related susceptibility to disease can result in significant stock losses.

The Tasmanian industry was also faced with issues including a closed population and biosecurity restrictions. There was a need to manage key commercial traits, including growth rates and disease resistance, to further expand the salmon breeding industry.

The response

In a joint project with Salmon Enterprises of Tasmania (SALTAS), CSIRO commenced a seven year project to establish a family-based selective breeding program in 2004. The selective breeding program focused on key performance traits in Tasmania's Atlantic salmon stocks, including increasing seawater growth; increasing resistance to disease; decreasing early maturation in seawater; and maintaining fillet colour and oil content.

CSIRO examined the performance of the fish and advised on which individuals to select to breed the next generation to ensure the best overall outcome for growers. Three age groups of fish were grown at any one time and about 180 salmon families (4000-5000 pedigreed individuals) were produced each year.

Atlantic salmon is the highest valued commercial fishery-related industry in Tasmania, with annual output valued at around $497 million[1].

The impact

Salmon from the breeding program demonstrated greater than 10 per cent gains in growth in each generation, which equates to production efficiencies worth millions of dollars each year. Increased disease resistance is leading to both reduced costs for salmon farmers and reduced requirements for freshwater to treat diseased fish.

Based on conservative assumptions, the net present value of the establishment phase of the Salmon Breeding Program is approximately $169.3 million with $78.6 million attributable to CSIRO[2].

1 Australian Bureau of Agricultural Resource Economics and Sciences (ABARES), 2014. *Australian Fisheries Statistics*. Canberra: ABARES.

2 CSIRO, 2016. *Research Impact Evaluation – Atlantic Salmon Breeding Case Study.* CSIRO, Canberra.

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